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EXAMINER

PHAM, HOA Q

ART UNIT	PAPER NUMBER
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2877

DATE MAILED: 01/28/2002

#5

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/778,245

Applicant(s)

LEE ET AL.

Examiner

Hoa Q. Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-88 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-88 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-13, 15-17, 19-25, 27-31, 34-36, and 41-44 are rejected under 35 U.S.C. 102(b) as being anticipated by *Piwonka-Corle et al. (5,608,526)*.

3. As to **claim 1**, Piwonka-Corle discloses a focused beam spectroscopic ellipsometry method and system, comprising:

focusing a polarized sample beam, having multiple polarization states, onto a sample (col. 5, lines 60-65 and col. 6, lines 18-20);

collecting radiation modified by the sample (col. 6, lines 20-25);

analyzing and dispersing radiation modified by and collected from the sample to provide a polarimetric spectrum (col. 11, lines 14-30); and

deriving film thickness and refractive index information of the sample from the sample (col. 4, lines 38-42).

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4. As to **claim 2**, Piwonka-Corle discloses everything claimed, as applied above, in addition the beam is split into a reference beam and a polarized sample beam, the sample beam being focused onto the sample (col. 14, lines 37-55).
5. As to **claim 3**, Piwonka-Corle discloses everything claimed, as applied above, in addition a reference beam is detected to produce a reference spectrum, and the deriving included comparing the polarimetric spectrum and reference spectrum (col. 14, lines 60-68 and col. 15, lines 5-20).
6. As to **claim 4**, Piwonka-Corle discloses everything claimed, as applied above, in addition the wavelengths range from 190 nm to 830 nm. (Col. 6, lines 43-44).
7. As to **claim 5**, Piwonka-Corle discloses everything claimed, as applied above, in addition splitting the beam includes directing the beam to a mirror placed less than completely across the radiation beam (col. 14, lines 50-65).
8. As to **claim 6**, Piwonka-Corle discloses everything claimed, as applied above, in addition splitting the beam includes deflecting a portion of the beam in to a sample beam, the un-deflected portion of the radiation defining a reference path (col. 14, lines 45-50 and lines 59-61).
9. As to **claim 7**, Piwonka-Corle discloses everything claimed, as applied above, in addition the beam is passed through a polarizer, analyzed by an analyzer and during focusing and analyzing, the polarizer and analyzer do not rotate (col. 9, lines 50-60 and col. 13, lines 30-35).
10. As to **claim 8**, Piwonka-Corle discloses everything claimed, as applied above, in addition a beam of polarized broad band radiation is focused onto the sample, and the focusing focuses the

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beam such that a multitude of polarization states is focused onto the sample, the polarization states being a function of an angle to a reference plane normal to the surface (col. 7, lines 28-40 and 55-60).

11. As to **claim 9**, Piwonka-Corle discloses everything claimed, as applied above, in addition the focusing focuses the polarized beam along different planes of incidence onto the sample (col. 7, lines 28-40 and 55-60).

12. As to **claim 10**, Piwonka-Corle discloses everything claimed, as applied above, in addition a common objective is used for focusing and collecting (col. 6, lines 9-11).

13. As to **claim 11**, Piwonka-Corle discloses everything claimed, as applied above, in addition the sample has more than one axis of birefringence and focusing and collecting employs an aperture centered about one of the axes (col. 8, lines 33-40).

14. As to **claim 12**, Piwonka-Corle discloses everything claimed, as applied above, in addition focusing and collecting are repeated using at least two different apertures aligned about at least two axes (col. 9, lines 28-45).

15. As to **claim 13**, Piwonka-Corle discloses everything claimed, as applied above, in addition focusing and collecting are repeated using at least two different apertures centered aligned about at least two axes (col. 9, lines 28-45).

16. As to **claim 15**, Piwonka-Corle discloses everything claimed, as applied above, in addition the polarimetric spectrum includes wavelengths from 190 nm to 830 nm (col. 5, lines 62-65).

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17. As to **claim 16**, Piwonka-Corle discloses everything claimed, as applied above, in addition analyzing analyzes the radiation modified by the sample with respect to a predetermined fixed polarization plane (col. 10, lines 53-55).

18. As to **claim 17**, Piwonka-Corle discloses everything claimed, as applied above, in addition a phase modulator may be included to alter the phase of the radiation modified by and collected from the sample (col. 10, lines 60-65).

19. As to **claim 19**, Piwonka-Corle discloses a focused beam spectroscopic ellipsometry method and system, comprising:

mean for focusing a polarized sample beam, having multiple polarization states, onto a sample (col. 5, lines 60-65 and col. 6, lines 18-20);

means for collecting radiation modified by the sample (col. 6, lines 20-25);

means for analyzing and dispersing radiation modified by and collected from the sample to provide a polarimetric spectrum (col. 11, lines 14-30); and

means for deriving film thickness and refractive index information of the sample from the sample (col. 4, lines 38-42).

20. As to **claim 20**, Piwonka-Corle discloses everything claimed, as applied above, in addition a radiation source providing broad band radiation (col. 6, lines 38-45), means for splitting the radiation into a polarized sample beam and a reference beam (col. 14, lines 37-55), and focusing means for focusing the sample so that the focused beam has a multitude of polarization states (col. 7, lines 28-40 and lines 55-60) are provided.

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21. As to **claim 21**, Piwonka-Corle discloses everything claimed, as applied above, in addition the focusing means focuses the polarized beam along different planes of incidence onto the sample (col. 7, lines 28-40 and 55-60).

22. As to **claim 22**, Piwonka-Corle discloses everything claimed, as applied above, in addition the splitting includes a totally reflecting mirror placed less than completely across the beam (col. 14, lines 50-65).

23. As to **claim 23**, Piwonka-Corle discloses everything claimed, as applied above, in addition the splitting means deflects a portion of the radiation from the source into a sample beam, the un-deflected portion being a reference beam (col. 17, lines 43-45).

24. As to **claim 24**, Piwonka-Corle discloses everything claimed, as applied above, in addition a detector is provided to detect the reference beam, and the deriving means includes means for comparing the polarimetric spectrum and the reference spectrum (col. 14, lines 42 and 60-68 and col. 15, lines 5-20).

25. As to **claim 25**, Piwonka-Corle discloses everything claimed, as applied above, in addition the radiation beam and reference spectrum include wavelengths ranging from 190 nm to 830 nm (col. 6, lines 40-45).

26. As to **claim 27**, Piwonka-Corle discloses everything claimed, as applied above, in addition the system includes a beam divider and a polarizer (col. 14, lines 45-50 and col. 10, lines 52-55).

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27. As to **claim 28**, Piwonka-Corle discloses everything claimed, as applied above, in addition the polarizer is in the optical path to the focusing means and forms part of the analyzing and dispersing means (col. 14, lines 47-58).

28. As to **claim 29**, Piwonka-Corle discloses everything claimed, as applied above, in addition the polarizer is in the optical path to the focusing means, the dispersing and analyzing means includes an analyzer in the optical path from the collecting means (col. 9, lines 52-57 and fig. 1, items 5 and 8).

29. As to **claim 30**, Piwonka-Corle discloses everything claimed, as applied above, in addition the beam is passed through a polarizer, analyzed by an analyzer and during focusing and analyzing, the polarizer and analyzer do not rotate (col. 9, lines 50-60 and col. 13, lines 30-35).

30. As to **claim 31**, Piwonka-Corle discloses everything claimed, as applied above, in addition the focusing and collecting means share a common objective (col. 6, lines 9-11).

31. As to **claim 34**, Piwonka-Corle discloses everything claimed, as applied above, in addition a radiation source (col. 6, lines 40-45) and focusing means for focusing radiation onto the sample, the sample having more than one axes of birefringence, and the apparatus further including at least two apertures aligned with one the axes, the aperture being in an optical path between the source and the analyzing means (col. 6, lines 9-14 and col. 8, lines 33-40).

32. As to **claim 35**, Piwonka-Corle discloses everything claimed, as applied above, in addition at least one aperture is centered about one the axes (col. 9, lines 28-45).



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33. As to **claim 36**, Piwonka-Corle discloses everything claimed, as applied above, in addition means for selecting one of the at least two apertures to be aligned with the axes is provided (col. 9, lines 28-45).

34. As to **claim 41**, Piwonka-Corle discloses everything claimed, as applied above, in addition and focusing means for focusing radiation onto the sample, the sample having more than one axes of birefringence, and the apparatus further including means for rotating a linear polarizer in an optical path of the sample beam (col. 8, lines 33-40 and col. 9, lines 54-56).

35. As to **claim 42**, Piwonka-Corle discloses everything claimed, as applied above, in addition the radiation includes include wavelengths ranging from 190 nm to 830 nm (col. 6, lines 40-45).

36. As to **claim 43**, Piwonka-Corle discloses everything claimed, as applied above, in addition the analyzing means analyzes radiation modified by the sample (col. 10, lines 52-55).

37. As to **claim 44**, Piwonka-Corle discloses everything claimed, as applied above, in addition a phase retarder is provided in the optical path between the collecting and analyzing means (col. 10, lines 60-68).

***Claim Rejections - 35 USC § 103***

38. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

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such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

39. Claims 18, 26, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Piwonka-Corle et al. (5,608,526)*.

40. As to **claims 18 and 45**, Piwonka-Corle discloses everything claimed, as applied above, with the exception of means to alter the phase by  $\pi/4$ , however it would have been obvious to one having ordinary skill in the art at the time of invention to modify the phase by  $\pi/4$  or any other amount since it has been held that where the general conditions of a claim are met, finding a workable or appropriate range requires only routine skill.

41. As to **claim 26**, Piwonka-Corle discloses everything claimed, as applied above, however a polarizing beam-splitter is not used to split the beam. *Official Notice* is taken to the use of polarizing beam-splitter and it would have been obvious to one having ordinary skill in the art to use a polarizing beam-splitter since doing so would prevent the need for separate beam-splitter and polarizer, thereby, reducing overall cost of the system.

### ***Specification***

1. The "continuation data" should be inserted in page 1 of the present specification.

### ***Double Patenting***

#### **35 U.S.C 101**

2. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

3. Claims 47-63 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 49-65 of prior U.S. Patent No. 6,184,984. This is a double patenting rejection.

#### **NON-STATUTORY**

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double

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patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).


Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-46 and 64-88 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18, 20-47, and 66-90 of U.S. Patent No. 6,184,984. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claimed invention is broader than what was claimed in the patent and all the limitations of the present claims are recited in claims 1-18, 20-47, and 66-90 of the patent.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (703) 308-4808. The examiner can normally be reached on 6:30 AM to 5 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703) 308-4881. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Hoa Q. Pham  
Primary Examiner  
Art Unit 2877

HP  
January 23, 2002